

REMARKS

Claims 1, 2, 4, 6, 10, 12-16, 20-22, 24, 25, 29-31, 36-39, 42, 45, 54-56, 58 and 61 are amended. Claims 1-61 remain in the application for consideration.

The specification is amended to correct a typographical error. Entry of such amendment is warranted and requested.

The drawings are objected to as respects "purge gas source" allegedly not being shown therein. Without admission to the propriety of the Examiner's assertion, all claims containing the phrase "purge gas source" have been amended to recite "purge gas line". For example, Fig. 1 diagrammatically depicts valves 40-43 having associated purge gas lines 49. Accordingly, it is respectfully requested that the Examiner withdraw the drawing rejections.

Claims 1-13 stand rejected with the Examiner alleging that it is unclear if the "valve" or the "body" is required to have "at least two inlets and at least one outlet". Applicant disagrees that there was any ambiguity in the claim language as originally presented, and as was clarified in the specification at p.6, Ins.14+. Clearly, it is the valve that is recited to have the subject at least two inlets and at least one outlet. Accordingly, the Examiner's assumption that it is the "body" that is required to have "at least two inlets and at least one outlet" is not correct. Claim 1 has been amended for clarification in this regard, and claims 1-13 are requested to be examined

as so worded. Withdrawal of the indefiniteness rejection of claims 1-13 is requested.

Claims 56-60 stand rejected as being indefinite as respects the limitation "structure". Claims 56-58 have been amended to provide the requisite antecedent basis. The Examiner's attention to detail in catching this oversight is appreciated. By entry of such amendments, it is requested that the indefiniteness rejection with respect to claims 56-60 be withdrawn.

Each of Applicant's claims that previously literally recited a "purge stream" and a "purge inlet" has been respectively amended to recite a "purge gas stream" and a "purge gas inlet" to the plenum chamber. This is consistent with such phraseology utilized in independent claim 45, and does not further limit such amended claims as such limitation was seen to be inherent in the claims as originally submitted.

The instant application contains six independent claims, namely claims 1, 14, 22, 31, 39 and 45. Each of such claims stands rejected as being obvious over a combination of references which includes, as a minimum, U.S. Patent Nos. 5,254,210 to Jones et al. and 5,200,388 to Abe et al. Applicant disagrees and requests reconsideration.

Each of Applicant's independent claims is directed to a manifold assembly for the feeding of reactive precursors. Each independent claim recites a body having a plenum chamber. Each independent claim also recites that the assembly includes a purge gas stream which has a purge gas inlet to the plenum chamber, and with the purge gas inlet being received

upstream of the plenum chamber precursor inlet or inlets. At least this latter feature, present in each of Applicant's independent claims, is not present in any of the references which have been applied in rejecting such claims.

Specifically, the Examiner acknowledges that Jones et al. does not teach a purge stream having a purge inlet to the plenum chamber. The undersigned concurs, as Fig. 1 in Jones et al. clearly only discloses precursor feed streams to its manifold assembly 80. The Examiner asserts that Abe et al. teaches a purge stream having a purge inlet to a plenum chamber. In doing so, the Examiner relies upon the Abe et al. exhaust device 20 and the streams associated therewith as teaching the same as Applicant's purge gas stream, as well as a purge gas inlet to a plenum chamber. However, the undersigned respectfully asserts that the Examiner is mistaken. First, there is no express or implied disclosure in Abe et al. of a purge gas inlet to a plenum chamber. The allegedly equivalent plenum construction in Abe et al. constitutes reactive precursor inlets, not purge gas inlets. Further and accordingly, Abe et al. does not disclose nor suggest the further specified teaching in each of Applicant's independent claims of the purge gas inlet being received upstream of the plenum chamber precursor inlet.

Further, the Examiner apparently relies on the piping to the exhaust device 20 as constituting the equivalent of the claim recited "purge gas stream". However, the piping that connects to the exhaust device 20 of Abe et al. is downstream of the precursor piping and could therefore not, in any

event, be considered as a purge gas stream received upstream of the precursor inlet(s) as is claimed. Indeed, the piping feeding to the exhaust device 20 of Abe et al. cannot be considered as a "purge gas stream" in the context of Applicant's claims as no purge gas is ever disclosed as being fed thereto, with such piping merely constituting vacuum drawdown/exhaust lines for exhaust device 20. (See col.4, Ins.5-10.)

Accordingly, as each of Applicant's independent claims recites this feature, which is not shown in either of the Jones et al. or the Abe et al. references, such two references taken in combination do not disclose this attribute of Applicant's independent claims either. Accordingly for at least this reason, the Examiner's rejection of Applicant's independent claims should be withdrawn. Alternately considered, as neither reference discloses this attribute of Applicant's independent claims, the combination of references does not collectively teach/disclose all of the limitations of Applicant's independent claims. Accordingly, the rejections thereof should be withdrawn and action to that end is requested.

As respects independent claim 31, such is rejected over a combination of Jones et al., Abe et al. and U.S. Patent No. 5,316,579 to McMillan et al. McMillan et al. is equally lacking in the above regards, and accordingly, independent claim 31 should be allowed. Action to that end is requested.

Applicant's independent claims are also believed to be allowable for other features not shown or suggested by the combination of the Jones et al. and Abe et al. teachings. For example with respect to claim 1, such

recites a valve that is received proximate the body. The phrase "proximate the body" with respect to a valve is defined in the specification at p.6, lns.9-12 to mean that an outlet of the valve assembly is within 8.0 inches of an external housing surface of the body. Exemplary reasons for doing so are as described in overcoming issues described in the Background section of the application as-filed. Neither Jones et al. nor Abe et al. refers to the positioning of a valve relative the body in either of those assemblies. Accordingly, the combination does not suggest nor teach the specific attribute of Applicant's independent claim 1 regarding "proximate the body". Accordingly, independent claim 1 should be allowed for this additional reason.

Claim 1 further recites that the valve has at least two inlets and at least one outlet. Clearly, valves 81 of Abe et al. are only depicted as having a single inlet, not at least two inlets. There is no teaching or suggestion of the valves of Jones et al. being configurable or operable in any manner other than that which is shown and described, which is with respect to a single inlet. The Examiner mistakenly asserts that the claim reference to "inlets" and "outlets" simply specifies an intended use that does not limit the scope of the claim or result in a structural difference over the prior art. The Examiner cites to three different cases and two different sections of the MPEP in support of such an assertion. However, the sections of the MPEP and the cases relied upon clearly address whether or not limitations in a claim preamble necessarily limit that which was being claimed in those

cases. Here, in part, the distinguishing limitations cited by Applicant's claims as respects "inlets" and "outlets" and "purge gas" are received in the body of the claims, not in the preamble of the respective claims, and further do provide structural significance and difference to any of that which is relied upon by the Examiner in the Jones et al. and Abe et al. teachings. Accordingly, the Examiner's reliance upon case law and MPEP assertions regarding the effect of claim preamble language is not supportive of the conclusions the Examiner makes with respect to Applicant's claim language appearing in the body of such claims. Regardless, each of Applicant's independent claims does recite a structural difference.

Further regarding claim 45, it is virtually inconceivable that Jones et al. and Abe et al. in combination disclose or suggest all the various positionings relative to the plenum chamber longitudinal axes and the plenum chamber first longitudinal axis end and second longitudinal axis end as recited. Accordingly, claim 45 should be allowed additionally for these reasons alone.


Each of Applicant's independent claims 1, 14, 22, 31, 39 and 45 should be allowed for at least the reasons argued above, and action to that end is requested. Applicant's dependent claims should be allowed as depending from allowable base claims, and for their own recited features which are neither shown nor suggested in the cited art. Action to that end is requested.

The undersigned has made an earnest attempt to address and overcome each of the assertions made by the Examiner in the above response. It is respectfully asserted that this application is in immediate condition for allowance, and action to that end is requested. If the Examiner is of a different opinion, the undersigned respectfully requests a telephone interview with the Examiner prior to issuance of any non-allowing subsequent action towards furthering prosecution. The Examiner's consideration in this regard would be greatly appreciated.

Respectfully submitted,

Dated: 9-3-03

By:


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Amendments to the Claims

1. (Currently Amended): A reactive precursor feeding manifold assembly, comprising:

a body comprising a plenum chamber;

a valve proximate the ~~body~~ body, the valve having at least two inlets and at least one outlet, at least one valve inlet being configured for connection with a reactive precursor source, at least one valve outlet feeding to a precursor inlet to the plenum chamber;

a purge gas stream having a purge gas inlet to the plenum chamber received upstream of the plenum chamber precursor inlet; and

the body comprising a plenum chamber outlet configured to connect with a substrate processing chamber.

2. (Currently Amended): The manifold assembly of claim 1 comprising a plurality of said valves having respective precursor inlets to the plenum chamber, the plenum chamber purge gas stream inlet being upstream of all precursor inlets to the plenum chamber.

3. (Original): The manifold assembly of claim 1 wherein the valve has only two inlets and only one outlet.

4. (Currently Amended): The manifold assembly of claim 1 wherein the valve has only two inlets and only one outlet, the other of the valve inlet being configured for connection with a purge gas ~~source~~ line.

5. (Original): The manifold assembly of claim 4 wherein the other valve inlet is upstream of the one valve inlet.

6. (Currently Amended): The manifold assembly of claim 4 comprising a plurality of said valves and having respective precursor inlets to the plenum chamber, the plenum chamber purge gas stream inlet being upstream of all precursor inlets to the plenum chamber.

7. (Original): The manifold assembly of claim 1 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

8. (Original): The manifold assembly of claim 1 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, the valve when the body is so mounted being at least partially received within peripheral lateral confines of a chamber housing of the substrate processing chamber.

9. (Original): The manifold assembly of claim 8 wherein the valve when the body is so mounted is totally received within peripheral lateral confines of said chamber housing.

10. (Currently Amended): The manifold assembly of claim 1 comprising:

a plurality of said valves having respective precursor inlets to the plenum chamber, the plenum chamber purge gas stream inlet being upstream of all precursor inlets to the plenum chamber;

structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, the respective valves when the body is so mounted being at least partially received within peripheral lateral confines of a chamber housing of the substrate processing chamber.

11. (Original): The manifold assembly of claim 10 wherein the valves when the body is so mounted are totally received within peripheral lateral confines of said chamber housing.

12. (Currently Amended): The manifold assembly of claim 1 wherein the plenum chamber is longitudinally elongated having a longitudinal axis, the plenum chamber having a first longitudinal axis end and a second longitudinal axis end, the plenum chamber purge gas inlet being proximate the first end, the plenum chamber outlet being proximate the second end.

13. (Currently Amended): The manifold assembly of claim 12 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

14. (Currently Amended): A reactive precursor feeding manifold assembly, comprising:

a body comprising a plenum chamber;

a precursor feed stream on the body in fluid communication with the plenum chamber at a precursor inlet to the plenum chamber;

a purge gas stream on the body in fluid communication with the plenum chamber at a purge gas inlet to the plenum chamber which is upstream of the plenum chamber precursor inlet and angled from the plenum chamber precursor inlet; and

the body comprising a plenum chamber outlet configured to connect with a substrate processing chamber.

15. (Currently Amended): The manifold assembly of claim 14 wherein the plenum chamber purge gas inlet is angled from the plenum chamber precursor inlet by from about 80° to 100°.

16. (Currently Amended): The manifold assembly of claim 14 wherein the plenum chamber purge gas inlet is angled from the plenum chamber precursor inlet by from about 89° to 91°.

17. (Original): The manifold assembly of claim 14 further comprising a valve in the precursor feed stream proximate the body.

18. (Original): The manifold assembly of claim 14 further comprising a 3-way valve in the precursor feed stream proximate the body.

19. (Original): The manifold assembly of claim 14 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

20. (Currently Amended): The manifold assembly of claim 14 wherein the plenum chamber is longitudinally elongated having a longitudinal axis, the plenum chamber having a first longitudinal axis end and a second longitudinal axis end, the plenum chamber purge gas inlet being proximate the first end, the plenum chamber outlet being proximate the second end.

21. (Currently Amended): The manifold assembly of claim 20 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

22. (Currently Amended): A reactive precursor feeding manifold assembly, comprising:

a body comprising a plenum chamber;

a plurality of respective precursor feed streams on the body in fluid communication with the plenum chamber at respective precursor inlets to the plenum chamber;

a purge gas stream on the body in fluid communication with the plenum chamber at a purge gas inlet to the plenum chamber which is upstream of all precursor inlets to the plenum chamber, the plenum chamber purge gas inlet being angled from all precursor inlets to the plenum chamber; and

the body comprising a plenum chamber outlet configured to connect with a substrate processing chamber.

23. (Original): The manifold assembly of claim 22 wherein no plenum chamber precursor inlet is angled from any other plenum chamber precursor inlet.

24. (Currently Amended): The manifold assembly of claim 23 wherein the plenum chamber purge gas inlet is angled from the plenum chamber precursor inlets by from about 80° to 100°.

25. (Currently Amended): The manifold assembly of claim 23 wherein the plenum chamber purge gas inlet is angled from the plenum chamber precursor inlets by from about 89° to 91°.

26. (Original): The manifold assembly of claim 22 further comprising a valve in the respective precursor feed streams proximate the body.

27. (Original): The manifold assembly of claim 22 further comprising a 3-way valve in the respective precursor feed streams proximate the body.

28. (Original): The manifold assembly of claim 22 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

29. (Currently Amended): The manifold assembly of claim 22 wherein the plenum chamber is longitudinally elongated having a longitudinal axis, the plenum chamber having a first longitudinal axis end and a second longitudinal axis end, the plenum chamber purge gas inlet being proximate the first end, the plenum chamber outlet being proximate the second end.

30. (Currently Amended): The manifold assembly of claim 29 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

31. (Currently Amended): A reactive precursor feeding manifold assembly, comprising:

- a body comprising a plenum chamber;

- a plurality of precursor feed streams on the body in fluid communication with the plenum chamber at respective precursor inlets to the plenum chamber;

- a purge gas stream on the body in fluid communication with the plenum chamber at a purge gas inlet to the plenum chamber which is upstream of the plenum chamber precursor inlets;

- the body comprising a plenum chamber outlet configured to connect with a substrate processing chamber; and

- structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

32. (Original): The manifold assembly of claim 31 wherein the structure comprises a projection on the body.

33. (Original): The manifold assembly of claim 31 wherein the structure comprises a flange.

34. (Original): The manifold assembly of claim 31 further comprising a valve in the respective precursor feed streams proximate the body.

35. (Original): The manifold assembly of claim 31 further comprising a 3-way valve in the respective precursor feed streams proximate the body.

36. (Currently Amended): The manifold assembly of claim 31 further comprising a 3-way valve in the respective precursor feed streams proximate the body, one inlet to the 3-way valve being configured for connection with the respective precursor feed stream, another inlet to the 3-way valve being configured for connection with a purge gas ~~source~~ line, the another inlet being upstream of the one inlet.

37. (Currently Amended): The manifold assembly of claim 31 wherein the plenum chamber is longitudinally elongated having a longitudinal axis, the plenum chamber having a first longitudinal axis end and a second longitudinal axis end, the plenum chamber purge gas inlet being proximate the first end, the plenum chamber outlet being proximate the second end.

38. (Currently Amended): The manifold assembly of claim 37 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

39. (Currently Amended): A reactive precursor feeding manifold assembly, comprising:

an elongate body comprising an elongate plenum chamber, the plenum chamber having a longitudinal axis;

a plurality of precursor feed streams on the body in fluid communication with the plenum chamber at respective precursor inlets to the plenum chamber received along the longitudinal axis;

a purge gas stream on the body in fluid communication with the plenum chamber at a purge gas inlet to the plenum chamber which is upstream of the plenum chamber precursor inlets;

the body comprising a plenum chamber outlet configured to connect with a substrate processing chamber; and

structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, and with the longitudinal axis being substantially vertical.

40. (Original): The manifold assembly of claim 39 wherein the structure comprises a projection on the body.

41. (Original): The manifold assembly of claim 39 wherein the structure comprises a flange.

42. (Currently Amended): The manifold assembly of claim 39 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

43. (Original): The manifold assembly of claim 39 further comprising a valve in the respective precursor feed streams proximate the body.

44. (Original): The manifold assembly of claim 39 further comprising a 3-way valve in the respective precursor feed streams proximate the body.

45. (Currently Amended): A reactive precursor feeding manifold assembly, comprising:

an elongate body comprising an elongate plenum chamber, the plenum chamber having a longitudinal axis, the plenum chamber having a first longitudinal axis end and a second longitudinal axis end;

the plenum chamber comprising a plurality of precursor inlets received along the longitudinal axis;

respective precursor feed streams on the body feeding to the plenum chamber precursor inlets, the respective precursor feed streams including an elongated segment joining with its plenum chamber precursor inlet and which is oriented substantially normal to the longitudinal axis;

respective valves positioned proximate the body in the respective precursor feed streams, the respective valves having at least two inlets and at least one outlet, one of the valve inlets being configured for connection with a reactive precursor source, another of the valve inlets being configured for connection with a purge gas ~~source~~ line;

a purge gas inlet to the plenum chamber at the first longitudinal axis end and upstream of all precursor inlets to the plenum chamber;

a purge gas stream on the body feeding to the purge gas inlet, the purge gas stream including an elongated segment joining with the purge gas inlet and which is substantially aligned on the longitudinal axis; and

the body comprising a plenum chamber outlet at the second longitudinal axis end configured to connect with a substrate processing chamber.

46. (Original): The manifold assembly of claim 45 wherein the valves have only two inlets and only one outlet.

47. (Original): The manifold assembly of claim 45 wherein the another valve inlet is upstream of the one valve inlet.

48. (Original): The manifold assembly of claim 45 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

49. (Original): The manifold assembly of claim 48 wherein the structure is configured to mount the body to a substrate processing chamber with the longitudinal axis being substantially vertical.

50. (Original): The manifold assembly of claim 48 wherein the structure comprises a projection on the body.

51. (Original): The manifold assembly of claim 48 wherein the structure comprises a flange.

52. (Original): The manifold assembly of claim 45 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, the respective valves when the body is so mounted being at least partially received within peripheral lateral confines of a chamber housing of the substrate processing chamber.

53. (Original): The manifold assembly of claim 52 wherein the valves when the body is so mounted are totally received within peripheral lateral confines of said chamber housing.

54. (Currently Amended): The manifold assembly of claim 45 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

55. (Currently Amended): The manifold assembly of claim 45 wherein,

the valves have only two inlets and only one outlet;

the another valve inlet is upstream of the one valve inlet; and

the plenum chamber purge gas inlet is on the longitudinal axis.

56. (Currently Amended): The manifold assembly of claim 55 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, and wherein the structure comprises a projection on the body.

57. (Original): The manifold assembly of claim 55 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, and wherein the structure comprises a flange.

58. (Currently Amended): The manifold assembly of claim 45 wherein,

the valves have only two inlets and only one outlet;

the another valve inlet is upstream of the one valve inlet; and

further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, the structure ~~is being~~ configured to mount the body to a substrate processing chamber with the longitudinal axis being substantially vertical.

59. (Original): The manifold assembly of claim 58 wherein the structure comprises a projection on the body.

60. (Original): The manifold assembly of claim 58 wherein the structure comprises a flange.

61. (Currently Amended): The manifold assembly of claim 58 wherein the plenum chamber purge gas inlet is on the longitudinal axis.